

MACHINE DIVISION
(1947-1966)

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Appendix A Organization of the Machine Division
1947-1966

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MACHINE DIVISION

This chapter will deal with those aspects of the Machine Division (MD) not related to the Intellofax System. Well over 50 percent of MD's activities from 1947^{to 19}~~19~~⁶⁷ were devoted to the Intellofax System and as such are discussed in detail in chapter _____ (Intellofax).

← 1. Mission and Functions

The first responsibility of the Office of the Chief of the Reference Branch, Office of Reports and Estimates (ORE), according to the Statement of Mission in March 1947¹, was to:

establish a machine operation center for appropriately and efficiently recording and filing intelligence information and intelligence in a readily accessible state for later listings, tabulations, and statistical reporting by machine research techniques for CIG [Central Intelligence Group] and the member agencies.

More specifically, ^{this center, known at first as} the Central Index, ~~(MD's first name)~~ was to: ^{2/}

1. Index, by business machine procedures the subject matter of all available reports, and other documents, of a foreign intelligence nature.
2. Locate and identify upon request all available intelligence material pertaining to any specific foreign subject or area.
3. Analyze the Index at regular intervals to determine superabundance or dearth of available documentary foreign intelligence on any subject of interest to the national security.
4. Apprise the pertinent offices of the results of such analyses for appropriate action.
5. Prepare and distribute accession lists of all newly acquired important foreign intelligence documents.

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6. Provide, upon request, complete bibliographies of available intelligence material on any specific foreign subject or area.
7. Maintain and analyze the IBM card files of Foreign Funds Control and similar special IBM files for listings and statistical intelligence information, within the capabilities and physical limitations of the Reference Branch.
8. Acquire, code, and process the special US Bombing Survey Reports and similar documentary files within the limits set down by responsible intelligence and research offices, and limited only by the capabilities and physical limitations of the Reference Branch.

In requesting a grade raise for the Chief, Central Index, the Assistant Director (AD), Office of Collection and Dissemination (OCD), added the following responsibilities ^{3/} In 1948,

1. Act as consultant on matters involving all types of office machine operations and technical procedures for CIA and member agencies.
2. Maintain continuous liaison with specialists both in technical industries and companies outside the government and with specialists in the intelligence offices associated with CIA.
3. Maintain continuous study, investigations, and research in the field of management engineering to assure the use of the most efficient and up-to-date methods and procedures in carrying out the mission of the Reference Center [previously called the Reference Branch].

← 2. Names and Chiefs

Historically, the Machine Division had three names from 1947 until September 1967. It was first organized as the Central Index of the [Reference Branch of JORE] ⁱⁿ from early 1947. ^{After} until the merger of the Reference Center with the ^{OCD} ~~Office of Collection and Dissemination~~ in May 1948. Under the new OCD, it was designated the Machine Methods Division (MMD), ^{and in} which name it retained until 1950 when it was renamed

Office of Central Reference (OCR, successor to OCD ~~since~~ 1955)
several elements. At that time
reorganized ~~and~~ all of OCR's machine ~~elements~~ *operations* were combined in
the Machine Support Division. It ~~will henceforth be referred to~~
~~as MD in this chapter.~~

MD had ^{only} four chiefs during its ~~20 years~~ *entire* of existence.

25X1A9a [REDACTED] a Navy Commander who had headed a large
IBM indexing effort during ^W World War II, reported for duty in
March 1947 to ^{re}organized the machine operations. He transferred
to the Management Staff in September 1950 as chief of a machine
planning and development group for the entire Agency. George

25X1A9a [REDACTED] ^{had} who also reported for duty in March 1947, had been
[REDACTED]'s deputy and had been responsible for the development
of much of the early equipment for the central reference

25X1A9a ^{replaced} [REDACTED] and
facilities. He ^{re}served as chief until September 1954,
when he joined Eastman Kodak Company. He was succeeded by

25X1A9a [REDACTED] who had been Assistant Chief of the Special
Register (SR) and responsible for machine developments in SR.

25X1A9a Upon [REDACTED] sudden death in January 1958, the division

25X1A9a reins were taken over by [REDACTED], who had been chief

25X1A9a of the Planning Staff and had been [REDACTED] deputy for one
month. He directed the machine operations until he retired in 1971.

Space orientation in 1947 dictated that separate
machine sections for OCD ^{is} Industrial Register (IR) and
Biographic Register (BR) be established. It was the hope of

early management that when all the registers were fully activated, the machine operation would again be examined to determine the feasibility of organizationally separating machine personnel from the Registers. ^{4/} The Graphics Register (GR) never did have its own machine section; its work was performed by MD and is discussed in chapter _____ (Graphics Register). As an alternative to transferring all machine

25X1A9a

operations to a single jurisdiction, [REDACTED] AD/CD, in 1949 appointed the Chief ^{MD} to exercise general surveillance over all OCD machine activities. ^{5/} There is no indication in the records that the absorption of IR's machine section by MD was reconsidered when the two units became colocated in the move from M Building to Riverside Stadium in April 1952. Not until July 1958 were the machine operations of IR merged with MD to provide better job scheduling and machine

25X1A9a

utilization. [REDACTED] AD ^{CB} at that time, felt that this merger was of primary importance to fully test combined units prior to the move to the new building in ^{6/} 1961. In June 1961 the machine section of BR was dissolved and its function integrated in ^{to} MD. This finally eliminated the costly administrative and supervisory burden of operating small independent units within substantive divisions ^{by} and placing them, instead, under the direction of technical specialists in MD.

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← 3. Support other than Intellofax

Through a recommendation based on a Management Survey of machine methods in the Agency, the Administrative Projects Branch was established in the Central Index in the fall of 1947 to perform accounting and administrative records work on a punched card basis for the Administrative Staff of the Agency. In August 1950 MD was relieved of providing this administrative support with the transfer of eleven T/O slots, ^{responsibility when 11 were transferred} to the Special Support Staff of Administration and Management. ^{7/}

One of the ^{external} ~~earliest non-OCR~~ jobs that MD assumed in 1948 and continued until 1967 was work for the National Intelligence Survey (NIS) Gazetteers. ^{8/} A punched card procedure was developed in order to produce gazetteers of place names for the NIS program. For purposes of efficient operation for this unclassified project, the keypunching was performed in the Board of Geographic Names (BGN), South Interior Building. The machines and personnel ^{(five} keypunchers and one supervisor) belonged to MD. In a report to 25X1A9a the [REDACTED] Committee in 1954, the AD/CD stated that this activity consumed five percent of MD's manpower. ^{2/} In 1959 support to this program cost OCR \$35,635. ^{10/} In April 1962 MD moved the personnel (and eventually the machines) ~~also~~ from Interior to CIA Headquarters because of the inability of BGN to release material for punching on an even flow. ^{12/} The scarcity of trained keypunch personnel at a time when MD's punching requirements for all customers were increasing forced MD (in 1963) to contract the job to a commercial keypunch service. ^{- in about} Eventually, approximately 1965--this also proved unsatisfactory and ^{12/} the job was brought back to MD.

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Indicative of other work MD performed ~~in addition to~~
~~Intellofax~~ ^{a.} is the list of tabulating card files maintained in
 1957 as a service to Agency components. ^{13/} The starting date of the
 project is ^{included} ~~indicated~~ when known, MD prepared a detailed summary of
 personnel, equipment, and supply costs for these programs in 1959. ^{14/}

1. The Library Book Order file served as an accounting record of all domestic and foreign publications procured by the Acquisitions Branch of the Library for all offices in the Agency. MD began this punched card file in 1949 for domestic book and periodical subscriptions.

2. The Card Catalog file was an index to all books in the CIA Library. Begun in 1949, this IBM file was maintained by MD until the Library switched its book cataloging from the Intelligence Subject Code (ISC^a - also used for classifying documents in the Intellofax System) to the Library of Congress classification scheme in 1959.

3. Three files, ~~the~~ Film (motion picture films), Spot Photography (ground photography), and Personality (photographs of persons), were indexes to materials held by or available to GR. *

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4. The [REDACTED] (code name [REDACTED]) maintained for DD/P, was used to prepare machine listings of information related to people traveling to and from Communist China.

25X1B4d

5. The [REDACTED] was used for preparing machine listings for ORR for the analysis of freight traffic.

* For details see chapter _____ (Graphics Register).

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6. The River Register file was used for preparing machine listings for ORR of Russian river vessels.

7. The Foreign Trade Register, started in February 1952^{15/} for ORR, generated machine listings of names of business establishments outside the Soviet Bloc ^{that} ~~which~~ were involved in trade transactions with Communist countries.

25X1B4d 8. The "numbers racket" file, maintained for the [REDACTED] of ORR, provided an analysis of [REDACTED]

25X1B4d

9. The ORR Time Study file enabled ORR to analyze the time expended on research projects.

10. The Policy and Program Coordination file, maintained for the War Plans Division of DD/P, contained names and identifying information concerning persons recommended for evacuation from their native countries in time of war.

25X1A2d1

11. The [REDACTED] file contained the names, geographic latitude and longitude of the primary bombing targets in China and the Soviet Bloc countries. (The requesting office was not indicated.)

As new activities mushroomed, MD's keypunch support work to non-OCR elements increased. In 1962 the creation of the Requirements Registry in OCR (and its ^{was later} eventual transfer^{red} to the DDI's Collection Guidance Staff) and the establishment of the Committee on Documentations (CODIB) Staff for the Community Information Processing (SCIPS) added to the division's work. Support to SCIPS in 1963 was

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reported as 3.5 man years. Throughout the entire CHIVE
 OCK-OCS
 (a joint Office of Computer Services] ~~for~~ program for
 developing a computer-based central reference capability)
 effort from 1964 to 1967, MD provided heavy support to
 OCS. During the last quarter of FY 1966, MD punched and
 processed for ^{25X1A2g} 25,000 cards, or the equivalent of one
 man year for that period. ^{17/} MD monthly reports for 1965
 and 1966 record other punching and tabulating support, such as ^{18/}
 the FDD Publications Survey Questionnaire and FDD Contractor's
 List; ^{the} OBI Map Library Area Card File; CODIB's Content Control
 Code, a subject and area code; ^{and the} Office of Operations Foreign
 Equipment Directory. ^{of the} MD duplicated index decks, such as the
 ISC, which had been put on IBM punched cards in 1957, the USSR
 Travel Folder, and the Ground Photography ^{File.} to meet a DIA
 request for input to its computer system,

The following statistical data indicate the amount
 of money spent on extra-machine support. (This included the NIS
 Gazetteer Program and other activities approved by OCR at the
 10/

25X1A1a

← 4. Research and Development Activities

Charged with the responsibility for the development
 of efficient operation of special machines and equipment for
 OCD/OCR, and for providing advisory services for CIA offices and
 other intelligence agencies on the availability and use of
 new machine methods and equipment, the MD experts maintained
 close contact from the outset with leading designers and

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The expertise of the personnel was constantly refreshed by special training that kept them abreast of the rapidly changing technology and ultimately prepared them for conversion to the world of computers in the late 1960's. By mid 1959 14 persons in MD had completed various Agency and non-Agency electronic computer courses. ^{25/}

Not all experimentation was successful. In 1952 MD personnel worked closely with the Office of Scientific Intelligence (OSI), which had sponsored a machine indexing project, the so-called [REDACTED] initiated in 1950 under the direction of [REDACTED] of the [REDACTED]

25X1A5a1

25X1A5a1

[REDACTED] A special 25X1A5a1

machine for information scanning developed by Hans Luhn of IBM was made available to MD. Mr. [REDACTED] ^{25X1A5a1} and his team from

25X1A5a1

[REDACTED] spent many months with MD and OCD indexing personnel in designing and testing on the Luhn machine a comprehensive scientific coding system (based on the ISC), which would serve the needs of CIA as well as of other government departments.

Dr. Andrews finally stated to the Office of Intelligence Coordination in November 1952 that he did not feel CIA would gain

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much tangible benefit from the [REDACTED] and that he was opposed to an extension of the contract with [REDACTED] ^{26/} During

25X1A5a1

1954-55 MD collaborated with the Office of Research and Reports (ORR) in testing the Rapid Selector, a machine for *abstracts on a 2,000-foot spool of 35-mm film* the rapid sorting of material on microfilm, developed by *that stored*

*
Vannevar Bush and improved upon by Ralph Shaw, Librarian

25X1A5a1

had
at the Department of Agriculture. ORR had a contract
with [REDACTED] since 1952 to
*
adapt the machine to ORR's analytical needs. By 1954
MD had come to the conclusion that the Rapid Selector did
not meet the Agency's standard of performance, that more
money ~~more~~ ^{for} research and development was required (as of

25X1A1a

September 1954 ORR and OCD had spent [REDACTED], and that
the system was too slow and cumbersome for OCD's mass produc-
tion requirements. ^{27/} Also in the early 1950's, MD and Library

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**
managers became interested in the [REDACTED] Coordinate
indexing scheme. In this form of indexing, cards were set up
for each subject encountered, and on each card, document
numbers were entered for each document that contained that
subject. If a relationship between two numbers was required,
then two cards or series of cards relating to the two
subjects were pulled and the coincidence of document numbers
was noted visually or matched by machine. In spite of

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[REDACTED] insistence, OCD rejected coordinate
indexing as being too cumbersome: for a large collection of indexed
material. ^{28/}

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**
[REDACTED]

In the early 1960's MD tested the Videograph Reproduction System, developed by the A.B. Dick Company, of interest as an improved office reproduction system that would be dry process, faster than the Photostat Expeditor used in the Intellofax System, and equipped to handle both hard copy and aperture cards. Two years of developmental work and testing (1960-62) led to its rejection by MD because the end product was of unacceptably ~~poor~~ ^{*} quality. MD also tested a prototype of an automatic film mounter in 1959-61, but after a prolonged period of debugging MD rejected it in early 1962. 29/

Throughout the years MD had ^{its own} ~~A~~ maintenance or equipment services shop. ~~Not only~~ responsible for the operation and maintenance of all the equipment used in the Intellofax System, the staff was also charged with the maintenance of the various types of office copying equipment installed throughout the Agency. A small machine and electronic shop was maintained for research and experimentation with new products to determine the feasibility of their use. The shop also designed and fabricated certain specialized equipment for other components of the Agency.

In July 1958, OCR established the Automation Development Group (ADG), a small staff with documentation and technical backgrounds, to follow automation developments in industry and government

* For details see chapter _____ (Intellofax).

30/

and to plan applications of new equipment in OCR. This

was thus transferred developmental responsibility from MD to ADG.

25X1A9a

[REDACTED] Chief, Planning Staff in MD, was named to head the ^{new} staff. ^{Among other things,} ADG was responsible for the Minicard experiment (1959-60), to which MD detailed 15 individuals for more than a year. (For MD's early involvement in Minicard planning during the 1950's, see chapter _____. [Intellofax]) With the establishment of the Agency's Automation Data Processing Staff in 1961, the ADG was abolished, and its major functions reverted to MD. ^{32/} [REDACTED] became Assistant Division Chief of MD.

25X1A9a

← 5. Inspector General Surveys

a. 1956

^{1956 survey of OCR}
The IG found MD's organization fundamentally strong, with a T/O of 70 divided into three branches: Microfilm, Operations, and Planning.

A genial spirit of friendship and comradeship, generated primarily by the key supervisors, has created an essentially happy organization in which the morale of many personnel in lower grades doing tedious work is surprisingly high.

However, the IG felt that the relaxed manner and informality resulted in slackness and inefficiency in certain of the Division's administrative practices, such as disorderly divisional records and unclear instructions to subordinates.

The IG criticized MD for accepting too many ad hoc requests for providing service from its laboratory section of the Microfilm Branch and recommended that the Chief/MD devote more time and attention to the daily operation of that section. The Survey highlighted the inability of the Planning Branch to identify, on its own initiative, areas in which machine techniques could improve intelligence operations; the IG stated that generally the Branch waited for other offices in the Agency to come to MD with a problem. The IG did commend the same branch, however, for the indexes in support of OCR, the NIS Gazetteer Program, and ORR. The IG recommended that the AD/CR confer with the Chief of the (MS) Management Staff and agree upon an aggressive program utilizing the joint resources of MD and ^{the} Business Machines Staff under MS to search for and identify areas within the Agency, wherein machine techniques could contribute effectively to the solution of long-range Agency information handling problems. The DD/I (Robert Amory) reported to the Director of Central Intelligence in June 1956 that the Chief of the ^{MD} Machine Division had already been directed to comply with the IG's suggestion that he devote more time to the daily operations and problems of the laboratory section and that the AD/CR had already consulted with the Chief of the ^{MS} Management Staff to ensure more extensive

adaptation of machine techniques to information handling problems.


b. ^{34/}
1963

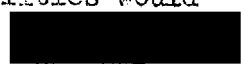
On the whole the 1963 IG survey was not too critical of MD. The IG again commented on the ~~near-unanimous~~ atmosphere of job satisfaction within MD. He recommended the upgrading of IBM machine and keypunch operator positions. There were a few operations ^{that} ~~which~~ the survey pointed out for correction. The IG found the card-punch section of 25 individuals perpetually undermanned and faced with enormous backlogs created by the heavy keypunch load of the newly created Requirements Registry in OCR. ^{He} ~~The IG~~ recommended that the ^{ASK} DD/I request the Director of Personnel to provide, on a temporary basis from the clerical pool, five additional keypunch operators to obviate excessive overtime and reduce backlogs. The IG found that Agency units levying computer programming requirements on MD usually established their own guidelines before consulting the skilled and experienced Planning Staff and then tended to resist logical changes recommended by the staff of experts. ^{He} ~~The~~ ^{MD} ~~MD~~ therefore recommended that the AD/CR instruct the Chief of the ~~Machine Division~~ to require all customers to initiate requests for programming services at the earliest practicable stage with the Planning Staff and that the latter review such requests and recommend any necessary modifications prior to their acceptance by MD as an approved project. The IG was concerned about the dissatisfaction that had arisen among the former BR machine personnel since the merger of BR's machine unit into MD in 1961.

After discussing this problem with MD management, the IG was convinced that MD was taking constructive action by rearranging machine assignments among the several units on a more equitable basis.

The IG raised the question of MD providing its personnel with exposure to more technical training courses. Tabulator equipment operators were interested ^{whereas} in computer training, keypunchers were interested in basic training in subjects, such as english language usage and typing.

25X1A9a

(The AD  answered some of the criticisms and listed the following actions, ⁱⁿ ~~as of~~ March 1964:

(1) OCR would continue to make maximum use of clerical pool personnel whenever keypunch help of an unclassified nature was needed; (2) requests for programming services would henceforth be ^e considered first by the ~~Office of Computer Services (OCS)~~ for possible computer support implications and the utilization of OCR's punched card capabilities would be arranged between OCS and OCR as appropriate. 

25X1A9a

felt that this approach would eliminate the problem identified in the IG Survey. The AD directed all division chiefs ^{to} ~~to~~ comply with the recommendations on training.

25X1A2g

6. The Impact of [REDACTED] 25X1A2g

MD began to support the [REDACTED] effort in the fall of 1964. Two key punch operators were furnished ^{to} OCS for an indefinite period. Daily card punch operations for various 25X1A2g [REDACTED] programs continued through 1966. (See also page 8)

25X1A2g

In July 1965 OCR set forth the personnel requirements for Project [REDACTED]. Of the 54 positions established, five ^{taken} were ~~deleted~~ from MD's T/O of 86.

7. Finale

There was actually no finale to the operations of MD. ~~the Machine Division~~. The same activities with the window open to the computer age continued ⁱⁿ ~~at~~ the Machine Support Division and are described in chapter _____ (Document Systems Group).